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Ms. Rachel Schmeltz  
Energy Star Program  
U.S. Environmental Protection Agency  
Washington D.C.

Dear Rachel:

Thank you for meeting with Carrier and ARI to discuss the final draft Energy Star specifications for central air conditioners and heat pumps. We appreciate the many opportunities you have extended to stakeholders to provide input.

To reiterate from our conversation, Carrier is very disappointed that the EER level has been changed from 11.5 to 12. This change presents undue burdens that have not fully been justified by EPA. Our concerns are detailed below.

#### 1. 12 EER Discourages Ozone Protection

We believe the 12 EER requirement will slow the transition to non-ozone depleting refrigerants required by the Clean Air Act in 2010. Because of refrigerant chemical properties, HCFC-22 has a 3/10ths efficiency advantage at full load (95 F Ambient) for a 14 SEER unit. This difference is driven by the thermophysical properties of the refrigerant. Because SEER and EER are coupled and cannot be designed independently, the natural corresponding EER for a 14 SEER HFC-410A non-ozone depleting system is approximately 11.5. Consequently, a 12 EER requirement will encourage the continued use of HCFC-22, which is both an ozone-depleting and global warming substance, at a critical time in the transition to non-ozone depleting alternatives. The continued proliferation of HCFC-22 poses both environmental concerns and potential consumer concerns as major refrigerant producers have forecasted a supply shortage in 2015 to service existing equipment.

#### 2. Potential Overstatement of Expected Energy Savings

One rationale EPA provided for the change to 12 EER was the increase in the available product population to 15%. This penetration includes the use of

independent coils matched with original equipment manufacturer condensing units. In several cases, when we match our condensing units with our like-size coil to those of an independent, we do not achieve the SEER and EER boost realized by the independent coil. We believe the discrepancy is explained in the simulated ratings programs used by independent coil manufacturers versus actual test data used to establish the performance of matched systems. Consequently, we question if the energy savings can be fully realized under the 15% population of units that EPA has used to justify 12 EER.

### 3. 12 EER Will Raise Consumer Costs

We believe the population of 12 EER products at EPA's new estimate of 15% also includes variable speed systems. This technology, while energy efficient, is also costly to consumers. It would be very difficult to retrofit existing furnaces to use variable speed blowers because the variable speed motor is tightly coupled to the controls in the air handler. Therefore the furnace or fan coil would need to be replaced in order for the homeowner to add the variable speed capability. The replacement of a furnace or air handler could be in the range of \$1500 to \$3000 or more depending on the specific application. This cost increase would price Energy Star out of reach for most consumers and erode participation in the program and the intended energy savings.

### 4. Available Unit Drop-off at 12 EER

The number of available Carrier product ratings drops significantly with a 12 EER requirement. Today, there are approximately 16,000 Carrier ratings that meet the current Energy Star requirements. When the minimum is raised to 11.5 EER, only 6,000 ratings qualify, and this number further drops to 5,000 with 12 EER. The industry experience is similar. ARI estimates a drop of 11% of air conditioning products, and 38% for heat pumps, from 11.5 to 12 EER.

In addition, several of the two-capacity systems, which are the most efficient in the industry, will no longer meet the Energy Star requirements. Often these units receive more consumer attention and serve as a vehicle for greater Energy Star awareness. Many 15 and 16 SEER two-capacity systems will not meet 12 EER.

This poses two concerns:

- (a) consumers will have fewer choices at the Energy Star level, and



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- (b) the drop in eligible unit population will likely lead to less energy savings overall at 12 EER versus greater product offerings and consumer penetration at 11.5 EER.

#### 5. EPA Has Failed to Fully Justify 12 EER

To our knowledge, an analysis of market impact has not been completed to justify 12 EER. What are the national energy savings given greater costs and fewer product choices at 12 EER versus 11.5 EER? What is EPA's estimate of higher costs? What is EPA's estimate of product drop-off? Rigorous analysis of these important factors seems to be missing from the EPA decision-making process, which further questions the justification for 12 EER.

#### Conclusion

EER at 11.5 is a more cost effective, available solution that will not impede the nation's transition to non-ozone depleting alternatives while encouraging greater consumer participation, and resulting greater energy savings, in the Energy Star Program. We strongly urge EPA to re-instate 11.5 EER in the final specifications.

Sincerely,



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